

This Engineering Technical Directive (ETD) is issued to EDC, GSFC, LARC, and NSIDC DAACs on the ECS Project. The ETD is to layout Sybase configuration changes to support Synergy IV.

Issue:

Synergy IV datapool requires more resources when running, thereby, impacting performance of other processes within Sybase. Two revisions to CCR 04-0141: (i) Set sybase server parameter “lock hashtable size” to 32768, (ii) Set “default data cache” cache_partition to 8.

More changes to CCR 04-0141A: (i) Set ‘lock spinlock ratio’ to 20, (ii) Set ‘lock table spinlock ratio’ to 5, and (iii) Increase additional 68 pages to the ‘max memory’.

Fix:

Make changes to the following parameters: max memory, lock hashtable size, lock hashtable size, lock spinlock ratio, lock table spinlock ratio, size and number of partitions of tempdb_cache, dp_cache, for tempdb and datapool databases, as outlined below:

DAAC	Current DP Cache Size	Current tempdb Cache Size	Synergy IV DP Cache (dp_cache) Size (to cache the whole database)	Synergy IV tempdb Cache (tempdb_cache) Size
PVC	8G	2G	8G with 8 partitions	2G with 8 partitions
GSFC	2G	500MB	10G with 8 partitions	2G with 8 partitions
EDC	2G	512MB	5G with 8 partitions	1G with 8 partitions
LaRC	1G	512MB	Ok with current cache size (with 4 partitions)	OK with current cache size (with 4 partitions)
NSIDC	512MB	512MB	1G with 4 partitions	OK with current cache size (with 4 partitions)

DAAC	Current “lock hashtable size”	Current “default data cache” cache_partition	Synergy IV “lock hashtable size”	Synergy IV “default data cache” cache_partition	Synergy IV DP Cache (dp_cache) pool config
PVC	2048	8	32768	8 (OK no change)	2K only
GSFC	2048	8	32768	8 (OK no change)	2K only
EDC	2048	8	32768	8 (OK no change)	2K only
LaRC	2048	4	32768	8	2K only
NSIDC	2048	1	32768	8	2K only

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DAAC	Current “lock spinlock ratio”	Current “lock table spinlock ratio”	Synergy IV “lock spinlock ratio”	Synergy IV “lock table spinlock ratio”	Sybase ‘max memory’ To be (pages) (estimated)
PVC	85	20	20	5	9147000
GSFC	85	20	20	5	13384636
EDC	85	20	20	5	9154831
LaRC	85	20	20	5	4152607
NSIDC	85	20	20	5	3816233

Note:

1. The dp_cache should be sized to hold the whole DataPool database. When the actual DataPool database’s data size is larger than its cache, the dp_cache needs to be resized. The actual size of a database can be shown by running sp_spaceused.
2. Since the ‘default data cache’ cache_partition in PVC, EDC, and GSFC are set to baseline values, only need to verify.
3. Since the tempdb_cache size and cache_partition in PVC, LARC, and NSIDC are set to baseline values, only need to verify.
4. The parameters for lock management improvement are lock hashtable size, lock spinlock ratio, and lock table spinlock ratio.
5. The ‘max memory’ changes are estimated based upon the changes needed during the configuration changes in PVC. When the lock spinlock ratio and lock table spinlock ratio are being configured, a different ‘max memory’ increase value might be prompted. The actual changes will be documented in the baseline after the changes are implemented in DAACs.

EDC Implementation:**Shutdown all modes and any application that access Sybase.****Increase ‘max memory’ and ‘lock hashtable size’**

```
sp_configure 'max memory', 9154831
go
sp_configure 'lock hashtable size', 32768
go
```

Change ‘lock spinlock ratio’ and ‘lock spinlock ratio’

```
sp_configure 'lock spinlock ratio', 20
go
sp_configure 'lock table spinlock ratio', 5
go
```

Reset 8K Buffer Pools for Data Pool Cache

```
sp_poolconfig dp_cache , "0", "8K"
go
```

Unbind tempdb and DataPool caches

```
sp_unbindcache_all "dp_cache"
go
sp_unbindcache_all "tempdb_cache"
go
```

Reconfigure tempdb and DataPool caches with partition

(*Note:* ‘default data cache’ is already configured with cache_partition=8)

```
sp_cacheconfig "dp_cache", "5120M", "cache_partition=8"
go
sp_cacheconfig "tempdb_cache", "1024M", "cache_partition=8"
go
```

**Shutdown Sybase and Bring up in single user mode:
Recycle Sybase Server for Changes to take affect****Bind tempdb and datapool Caches**

```
sp_bindcache "dp_cache", DataPool
```

```
go
sp_bindcache "tempdb_cache", tempdb
go
```

Restart Sybase in Multi-User Mode**Verify dp_cache, tempdb_cache, and ‘default data cache’ are set to the baseline values**

```
sp_cacheconfig
go
sp_helpcache
go
```

Under heavy load, run another series of sp_sysmon to analyze Sybase performance for additional tuning if necessary.

2. GSFC Implementation:

Shutdown all modes and any application that access Sybase.

Increase ‘max memory’ and ‘lock hashtable size’

```
sp_configure 'max memory', 13384636
go
sp_configure 'lock hashtable size', 32768
go
```

Change ‘lock spinlock ratio’ and ‘lock spinlock ratio’

```
sp_configure 'lock spinlock ratio', 20
go
sp_configure 'lock table spinlock ratio', 5
go
```

Reset 16K Buffer Pools for Data Pool Cache

```
sp_poolconfig dp_cache , "0", "16K"
go
```

Unbind DatPool and tempdb caches

```
sp_unbindcache_all "dp_cache"
```

```
go
sp_unbindcache_all "tempdb_cache"
go
```

Reconfigure tempdb and DataPool caches with 8 partitions

(Note: ‘default data cache’ is already configured with cache_partition=8)

```
sp_cacheconfig "dp_cache", "10240M", "cache_partition=8"
go
sp_cacheconfig "tempdb_cache", "2048M", "cache_partition=8"
go
```

Shutdown Sybase and Bring up in single user mode:

Recycle Sybase Server for Changes to take affect

Bind tempdb and datapool Caches

```
sp_bindcache "dp_cache", DataPool
go
sp_bindcache "tempdb_cache", tempdb
go
```

Restart Sybase in Multi-User Mode**Verify dp_cache, tempdb_cache, and ‘default data cache’ are set to the baseline values**

```
sp_cacheconfig
go
sp_helpcache
go
```

Under heavy load, run another series of sp_sysmon for performance analysis, this will determine if additional tuning is necessary.

3. LARC Implementation:

Shutdown all modes and any application that access Sybase.

Increase ‘max memory’ and ‘lock hashtable size’

```
sp_configure 'max memory', 4152607
```

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```
go  
sp_configure 'lock hashtable size', 32768  
go
```

Change 'lock spinlock ratio' and 'lock spinlock ratio'

```
sp_configure 'lock spinlock ratio', 20  
go  
sp_configure 'lock table spinlock ratio', 5  
go
```

Reset 8K Buffer Pools for Data Pool Cache

```
sp_poolconfig dp_cache , "0", "8K"  
go
```

Reconfigure 'default data cache' cache partition

(*Note:* dp_cache and tempdb_cache are already configured)

```
sp_cacheconfig "default data cache", "cache_partition=8"  
go
```

Recycle Sybase Server for Changes to take affect**Verify dp_cache, tempdb_cache, and 'default data cache' are set to the baseline values**

```
sp_cacheconfig  
go  
sp_helpcache  
go
```

Under heavy load, run another series of sp_sysmon to analyze Sybase performance for additional tuning if necessary.

4. NSIDC Implementation:

Shutdown all modes and any application that access Sybase.

Increase 'max memory' and 'lock hashtable size'

```
sp_configure 'max memory', 3816233  
go
```

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```
sp_configure 'lock hashtable size', 32768
go
```

Change 'lock spinlock ratio' and 'lock spinlock ratio'

```
sp_configure 'lock spinlock ratio', 20
go
sp_configure 'lock table spinlock ratio', 5
go
```

Reset 8K Buffer Pools for Data Pool Cache

```
sp_poolconfig dp_cache , "0", "8K"
go
```

Unbind DataPool cache

```
sp_unbindcache_all "dp_cache"
go
```

Reconfigure DataPool cache and 'default data cache' cache partition
(Note: tempdb_cache is already configured)

```
sp_cacheconfig "dp_cache", "1024M", "cache_partition=4"
go
sp_cacheconfig "default data cache", "cache_partition=8"
go
```

Recycle Sybase Server for Changes to take affect**Bind datapool Cache**

```
sp_bindcache "dp_cache", DataPool
go
```

Verify dp_cache, tempdb_cache, and 'default data cache' are set to the baseline values

```
sp_cacheconfig
go
sp_helpcache
go
```

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Under heavy load, run another series of sp_sysmon to analyze Sybase performance for additional tuning if necessary.

This technical directive should be implemented along with Standard Baseline Document.

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Reference CCR: 04-0141B

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